SAF-B00-054 100-NR-1 TSD Sites R. A. Sampling – Soil FINAL DATA PACKAGE

E:MAIL RESULTS TO	O:	
Rick Kerkow	372-865	5 N/A NITIAL/DATE
COMPLETE COPY O	F DATA PAG	CKAGE TO:
Rick Kerkow	X5-60	BJ 4/15/03 INITIATIDATE
Jeanette Duncan		BL 4/15/03 INITIALDATE
COMMENTS: (PLEA SHEET)	SE INCLUD	E THE FOLLOWING ON THE FAX COVER
SDG (H2105		SAF-B00-054
Rad only	Chem only	X Rad & Chem
X Complete	Partia	d

Waste Site: 116-N-1 Trench Plume 8-B





3 April 2003

Joan Kessner Bechtel-Hanford, Inc. 3190 Washington Way MSIN H9-03 Richland, WA 99352

Subject: Contract No. 630

Analytical Data Package

Dear Ms. Kessner:

Enclosed are the hard copy analytical reports for the batch number/fraction indicated (marked X) in the following table:

0303L985
H2105
B00-054
3-20-03
1
Soil
X
X
X
Χ
Χ.

The electronic data deliverable (EDD) will be emailed shortly. If you have any questions, please don't hesitate to contact me at (610) 280-3012.

\$incerely,

Lipnville Labøratory Incorporated

Oriette S. Johnson Project Manager

r:\group\pm\orlette\tnu-hanford\data\b_ltrs.doc



Lionville Laboratory, Inc. VOA ANALYTICAL DATA PACKAGE FOR TNU-HANFORD B00-054, H2105

DATE RECEIVED: 03/20/03

LVL LOT # :0303L985

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J00JD1	001	s	03LVG065	03/18/03	N/A	03/21/03
J00JD1	001 MS	S	03LVG065	03/18/03	N/A	03/21/03
J00JD1	001 MSD	S	03LVG065	03/18/03	N/A	03/21/03
LAB QC:						
VBLKMT VBLKMT	MB1 MB1 BS	s s	03LVG065 03LVG065	N/A N/A	N/A N/A	03/21/03 03/21/03



Client: TNU-HANFORD B00-054

LVL#: 0303L985

SDG/SAF # H2105/B00-054

W.O. #: 11343-606-001-9999-00

Date Received: 03-20-2003

GC/MS VOLATILE

One (1) soil sample was collected on 03-18-2003.

The sample and its associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260B for TCL volatile target compounds on 03-21-2003.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from a sample that met LvLI's sample acceptance policy with the exception of a discrepancy, which has been recorded on the Sample Receipt Checklist (p-10).
- 2. The sample was analyzed within holding time.
- 3. Non-target compounds were not detected in the sample.
- 4. All surrogate recoveries were within EPA QC limits.
- 5. All matrix spike recoveries were within EPA QC limits.
- 6. All blank spike recoveries were within EPA QC limits.
- 7. Internal standard area criteria were not met for sample J00JD1. The analysis of associated matrix spike sample fulfills the reanalysis requirement.
- 8. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

J. Michael Taylor

President

Lionville Laboratory Incorporated

D WULK

som\group\data\voa\tnu-hanford\0303-985.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 0 pages.

GLOSSARY

DATA QUALIFIERS

- U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I = Interference.
- NQ = Result qualitatively confirmed but not able to quantify.
- A = Indicates that a TIC is a suspected aldol-condensation product.
- N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y = Additional qualifiers used as required are explained in the case narrative.



3

GLOSSARY

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions
		and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Suffix added to sample number to indicate that results are from a diluted analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP, Z = Indicates Spiked Compound.



4

TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quan modifications:

- MP Missed Peak: manually added peak not found by automatic quan program.
- PA Peak Assignment: quan report was changed to reflect correct peak assignment.
- RI Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.



RFW Batch Number: 0303L985

*= Outside of EPA CLP QC limits.

Volatiles by GC/MS, HSL List

Client: TNU-HANFORD B00-054, H2105 Work Order: 11343606001 Page: 1a

Report Date: 03/23/03 09:24

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VBLKMT BS VBLKMT J00JD1 J00JD1 J00JD1 Cust ID: 03LVG065-MB1 001 MSD 03LVG065-MB1 001 001 MS RFW#: Sample SOIL SOIL SOIL SOIL SOIL Matrix: Information 0.962 1.00 1.00 1.02 0.943 D.F.: ua/Ka ua/Ka ug/Kg ug/Kg ug/Kg Units: કૃ 96 왐 95 8 98 93 왕 Toluene-d8 95 89 ۶ 90 2 ۶. 85 ş 84 84 Ŷ. Bromofluorobenzene Surrogate ş. 95 % 100 왕 101 93 97 ş 1.2-Dichloroethane-d4 Recovery 11 U 10 11 10 U 11 U U 10 Chloromethane ____ 10 U 11 U 10 U 11 U 10 U Bromomethane_____ 10 U 11 U 10 U 10 U 11 U Vinyl Chloride 10 U 10 U 11 U 11 U 10 U Chloroethane_____ 17 5 U 5 U 21 17 Methylene Chloride_____ 10 U J 3 J 3 J Acetone 2 J 5 U 5 U 6 U 11 5 tt Carbon Disulfide _____ 왐 5 11 98 81 % 5 U 85 % 1,1-Dichloroethene_____ 5 U U 6 U 5 U 6 U 1.1-Dichloroethane ____ U IJ 6 U 5 U 1,2-Dichloroethene (total)_____ 11 6 U 5 U U 6 U 5 U Chloroform ____ 5 U 6 U U 5 U IJ 1,2-Dichloroethane 11 [] 10 U 10 17 2-Butanone ______ 10 U 11 11 U 6 U 6 U 5 U 5 [] 1,1,1-Trichloroethane 6 U 5 U 5 Ü 5 U Carbon Tetrachloride 6 U 6 U 5 U 5 U 5 U IJ Bromodichloromethane _____ 5 U U 5 Ü 6 U 1,2-Dichloropropane_____ IJ IJ 5 U 5 U cis-1,3-Dichloropropene_____ 5 U 100 ٠ 5 U 99 윷 101 Trichloroethene_____ U 6 U 5 U 6 U 5 U Dibromochloromethane 5 U 5 U 6 U 5 U 6 U 1,1,2-Trichloroethane 5 U 102 102 چ 104 Веплепе 5 U 6 U 5 U 6 U Trans-1,3-Dichloropropene 5 U IJ U 5 U 5 U Bromoform 5 U 10 U 10 U 10 U 11 [] 11 U 4-Methyl-2-pentanone 11 U 10 U 10 U 10 U 11 [] 2-Hexanone 6 U 5 U 5 U 6 U 5 U Tetrachloroethene_____ 5 U 5 U 6 U TT 5 U 1.1.2.2-Tetrachloroethane Toluene 5 U 103 5 U 103 104

RFW Batch Number: 030	3L985 _ Clie	nt: TNU-	HANFO	ORD B00-05	4	Work C	rde	r: 11343606	001	Page: 1h	2	
	Cust ID:	J00JD1		J00JD1		J00JD1	Ĺ	VBLKMT		VBLKMT BS		7
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Ethylbenzene		5	U	6	U	6	U	5	U	5	U	
Styrene		5	U	6	U	6	U	5	U	5	U	
Xylene (total)		5	U	6	U	6	U	5	U	5	U	
*= Outside of EPA CLP	QC limits.											

Lionville Laboratory Use Only

Custody Iranster Record/Lab Work nequest Page _ ot _

03031985

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS



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Bechtel Hanford Inc.	C	HAIN OF CUST	ODY/S	AMPL	E ANALY	YSIS	RE	QUI	EST	·	B0	0-054-238	Page 1	of 1
Collector R B Kerkow	1	any Contact Kerkow	Telephor 372-2					ect Co NT, SJ		ator P	rice Code	85	Data Tu	rnaround
Project Designation 100-NR-1 TSD Sites R. A. Sampling - Soil		ing Location N-1 Trench, Plume 8-B	(container 7	733)			SAF B00-			A	ir Qualit	у 🗆	7de	Lys
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LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Hamford

Purchase Order/Project:

DATE: 3.20.03

SAF#) SOW# / Release #: 600 .054

Laboratory SDG #:

	ALL ENTRIES MARKED "NO" MUST BE E		1 111B CO[1][1]		
1.	Custody seals on coolers or shipping container intact, signed and dated?	NY es	□ No	□ N/A .	☐ see Comment #
2.	Outside of coolers or shipping containers are free from damage?	Yes	□ No	D N/A	☐ see Comment #
3.	Airbill # recorded?	Yes	□ No	□ N/A	□ see Comment #
4.	All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	D'Yes	□ No	□ N/A	□ see Comment #
5. .	Sample containers are intact?	TOYYes	_ N ₀	□ N/A	☐ see Comment if
6.	Custody seals on sample containers intact, signed and dated?	TYYes	□N ₀	□ N/A	□ see Comment
7.	All samples on coc received?	Yes Yes	□ No	□ N/A	See Comment
8.	All sample label information matches coc?	Yes	□Ņo	□ N/A·	D see Comment
9.	Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	ta/res	□ N ₀	□ N/A	☐ see Comment
10.	Shipment meets LvLl Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	□Yes	™ No	□ N/A	↑♥ see Comment
11.	Where applicable, bar code labels are affixed to coc?	D Yes	□ No	ÞÝVA	☐ see Commen
12.	coc signed and dated?	Yes	□ No	□ N/A	□ see Commen
13.	coc will be faxed or emailed to client?	Yes	□ No	□ N/A	☐ see Commer
14.	Project Manager/Client contacted concerning discrepancies? (name/date)	□ Yes	□ No	D-N/A	□ see Comme

#ERC 01-027/10-6

Laboratory Sample Custodian:

Laboratory Project Manager:



Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-054 H 2105

DATE RECEIVED: 03/20/03

LVL LOT # :0303L985

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
						
J00JD1	001	s	03LE0335	03/18/03	03/20/03	03/21/03
J00JD1	001 MS	S	03LE0335	03/18/03	03/20/03	03/24/03
J00JD1	001 MSD	S	03LE0335	03/18/03	03/20/03	03/24/03
LAB QC:						
SBLKPW	MB1	s	03LE0335	N/A	03/20/03	03/21/03
SBLKPW	MB1 BS	S	03LE0335	N/A	03/20/03	03/21/03



Client: TNU-HANFORD B00-054

LVL#: 0303L985

SDG/SAF # H2105/B00-054

W.O. #: 11343-606-001-9999-00 Date Received: 03-20-2003

SEMIVOLATILE

One (1) soil sample was collected on 03-18-2003.

The sample and its associated QC samples were extracted according to Lionville Laboratory OPs based on method 3550 on 03-20-2003 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 03-21,24-2003.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from a sample that met LvLI's sample acceptance policy with the exception of a discrepancy, which has been recorded on the Sample Receipt Checklist (p-12).
- 2. The sample was extracted and analyzed within required holding time.
- 3. Non-target compounds were detected in the sample.
- 4. All surrogate recoveries were within EPA QC limits.
- 5. All blank spike recoveries were within EPA QC limits.
- 6. Two (2) of twenty-two (22) matrix spike recoveries were outside EPA QC limits.
- 7. Internal standard area and retention time criteria were met.
- 8. Manual integrations are performed according to OP 21-06A-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
- 9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

J. Michael Taylor

Dessident

Date

President

Lionville Laboratory Incorporated

-0 July

som\gorup\data\bna\tnu-hanford-0303-985.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 2 pages.

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- NQ = Result qualitatively confirmed but not able to quantify.
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- This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y = Additional qualifiers used as required are explained in the case naπative.



2

GLOSSARY

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions
		and carried through all the steps in the method. Spike recoveries are reported.

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MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Suffix added to sample number to indicate that results are from a diluted analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP, Z = Indicates Spiked Compound.

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TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quan modifications:

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- SP Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- PI Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.



Lionville Laboratory, Inc.

RFW Batch Number: 0303L985

Semivolatiles by GC/MS, HSL List

Client: TNU-HANFORD B00-054/H2/05 Work Order: 11343606001

Report Date: 03/25/03 13:00

Page: la 🔾

	Cust ID:	J00JD1	J00JD1		J00JD1		SBLKPW		SBLKPW BS		·
Sample	RFW#:	001	001 MS		001 MSD		03LE0335-M	в1	03LE0335-M	в1	
Information	Matrix:	SOIL	SOIL		SOIL		SOIL		SOIL		
	D.F.:	1.00	1.00)	1.0	0	1.0	0	1.0	0	
	Units:	ug/Kg	ug/Kg	J	ug/K	g	ug/K	g	ug/K	g	
	Nitrobenzene-d5	84 %	107	8	86	૪	94	જ	88	ક	
Surrogate	2-Fluorobiphenyl	82 %	99	8	82	왐	90	કૃ	86	왕	
Recovery	Terphenyl-d14	110 %	132	ક	111	왐	128	ક	118	ક	
	Phenol-d5	78 %	99	웋	77	૪	88	%	81	왐	
	2-Fluorophenol	77 %	97	૪	78	왐	86	૪	80	8	
	2,4,6-Tribromophenol	88 %	111	8	89	용	91	૪	91	8	
	=======================================										=======fl
Phenol		370 U	96 *		73	왕 	330	U	78	*	
bis (2-Chlore	oethyl)ether	370 U		Ü	370	U	330	U	330	U	
2-Chlorophei	nol	370 U	93	8 	72	કે 	330	U	77	8	
1,3-Dichlore	obenzene	370 U	•	U		Ū	330	Ū	330	U	
1,4-Dichlore	obenzene	370 U	86	8 	71	용	330	U	76	8	
2 Mother above	obenzene	3 7 0 ปี 370 ปี		U U	370	Ü	330	U	330	Ū	
2-Methyrphe	nol(1-Chloropropane)	370 U 370 U		Ū	370 370	U U	330	U	330	U	
2,2 -UXYDIS	-Methylphenol	370 U		U	370 370	Ū	330 330	U	330	U	
N-Nitroso-d	i-n-propylamine	370 U	96	િ ક	74	∪ %	330	Ū	330	Ü	
Hevachloroe	thane	370 U	370		7 4 370	Ū	330	IJ	77	용	
Nitrohenzen	e	370 U	370	_	370 370	ū	330	IJ	330	Ü	
Isophorope		370 U		U	370	U	330	U	330	U	
2-Nitrophen	ol	370 U	370	_	370	Ū	330	Ū	330	Ü	
2.4-Dimethy	lphenol	370 U	370	_	370	U	330	U	330 330	U	
bis(2-Chlore	oethoxy) methane	370 U		Ü	370	U	330	Ū	330	IJ	
2.4-Dichlore	ophenol	370 U	· -	U	370	Ū	330	Ū	330	IJ	
1,2,4-Trich	lorobenzene	370 U	88	&	73	ક	330	U	81	₽ 8	
Naphthalene		370 U	370	-	370	Ü	330	U	330	Ü	
	line	370 U	370	_	370	U	330	U	330	Ü	
Hexachlorob	utadiene	370 U		Ū	370	U	330	U	330	U	
4-Chloro-3-	methylphenol	370 U	102	8	79	e e	330	Ū	86	& &	
2-Methylnap	hthalene	370 U		Ū	370	Ū	330	Ū	330	Ü	
Hexachloroc	yclopentadiene	370 U	370	Ū	370	U	330	U	330	Ü	
	lorophenol	370 U		Ū	370	Ü	330	Ü	330	Ü	
2,4,5-Trich		920 U		Ū	920	Ü	840	Ū	840	U	
	of EPA CLP QC limits.				7	-	2.20	-	010	-	

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP OC limits.

1 F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

	CLIENT	SAMPLE	NO.	
	J00JD1			

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNU-HANFORD B00-054

Lab Sample ID: <u>0303L985-001</u> Matrix: (soil/water) SOIL

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D032115

Level: (low/med) LOW Date Received: <u>03/20/03</u>

% Moisture: <u>10</u> decanted: (Y/N)__ Date Extracted: <u>03/20/03</u>

Concentrated Extract Volume: 1000 (uL) Date Analyzed: <u>03/21/03</u>

Dilution Factor: 1.00 Injection Volume: 2.0(uL)

GPC Cleanup: (Y/N) N pH: $_{7.0}$ CONCENTRATION UNITS: (ug/L or ug/Kg) uq/Kq Number TICs found: 6

CAS NUMBER COMPOUND NAME RT | EST. CONC. | Q 3.707 100 JB UNKNOWN 200 JAB 6.725 2. ALDOL CONDENSATE

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

ı 			
SBLKPW	Ī		

CLIENT SAMPLE NO.

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNU-HANFORD B00-054

Matrix: (soil/water) SOIL Lab Sample ID: 03LE0335-MB1

Sample wt/vol: 30.0 (g/mL) GLab File ID: <u>D032113</u>

Level: (low/med) LOW Date Received: <u>03/20/03</u>

% Moisture: ____ decanted: (Y/N)__ Date Extracted: 03/20/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 03/21/03

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS: Number TICs found: _5 (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
				=====
1.	UNKNOWN	3.722	100	J
2.	ALDOL CONDENSATE	6.731	100	JA
3.	ALDOL CONDENSATE	7.287	20000	JA
4. 79-34-5	1,1,2,2-TETRACHLOROETHANE	8.740	80	JN
5. 7683-64-9	SQUALENE	29.601	70	JN

Lionville Labor	atory (Jse Only C	usto	dy T	ran	ste	er F	Reco	ord/L	מם.	VV C	rk	He	qu	につ	L Pa	يـ ge_ن	01) =	\	.	
<u> 6303</u>	<u> 198</u>			•					TE ONL					•								110	NOTE THE	BORATOR	YING
Client TN	u H	anford	Box	.054				Refrige	ator #		Ь														
		pling Date						#57	Ocatalaan	Liquid															
Project #	j. O 4111	11343-606	1. 001-	9999-0	20			#/type	Container	Solid	10										_ [
		ne#		_,,				14-1		Liquid	('													_	
Lionville Labo	oratory	Project Manage	· Or Ord	Hea	مممده	Cil		Volume		Solid	1										7				
OC SPEC	-,,	Del 5イン	TAT	duch				Preserv	atives		-														
								ANALY	CEC				ANIC		350			INO			3				
Date Rec'd	<u>3-20</u>	0.03	Date Due _	3-27	7-03			REQUE		->	VOA	BNA	Pest/ PCB	Herb	Alcehok Slycols			Metal	S	Ha	J. Ž.				
MATRIX							trix		_					Ţ			lle Lal	borato	ry Us	e Only	<u>/</u>				
CODES: S - Soil SE - Sediment	Lab ID	Clie	ent ID/Descr	lption		Cho	IC Dsen /}	 Matrix	Date Collected	Time Collected	H4290	HZ1			SCSC			023		IPIT	10403 10,403 10,504	אנא			
SO - Solid SL - Sludge		<u> </u>				MS	MSD				0	ಕ	↓	<u> </u>	9			MC MC		4	ний	H			
W - Water O - Oil	001	J00J1	<u> </u>			<u>></u>	×	S	3-18-03	1000	X	1×	<u> </u>		X			X		X	X				
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Liquids L - EP/TCLP		T								{				Ĺ		Ĺ'									
Leachate																			_				_		_ [
Wt - Wipe X - Other	<u> </u>								1			1													
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Special Instruc	tions:	SAF #	B00-0	024			M	10	1. <u>Sb.</u> 1	Ba, B	<u>a, (</u>	<u>d</u> .	<u>Cr. (</u>	Cu.	<u>и</u>	<u>N;</u>	Flg,		mples Shippe	werea		Tai	nper Resis	stant Sea	
ı									2. <u>V. 2</u>	n. 175	. 01	2 2	<u>c, 1</u>	<u> </u>	rig .			Ha	and Del	ivered		Pa	ckage	g) or	N
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Relinquished by	Received by	Date	Time
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WAST	E KEN	RITT	N

Discrepancies Between Samples Labels and COC Record? Y or NOTES:

5) Received Within Holding Times Or N

Upon Sample Rec't

Cooler 15.6 °C

Bechtel Hanford Inc.	C	HAIN OF CUST	N OF CUSTODY/SAMPLE ANALYSIS REQUEST B00-054-										954-238 Page 1 of 1		
Collector R B Kerkow	Com	pany Contact B Kerkow	Telepho 372-2	ne No.				t Coord		Price Code	35	Data Turnaround			
Project Designation 100-NR-1 TSD Sites R. A. Sampling - Soil		oling Location 6-N-1 Trench , Plume 8-B	(container	733)			SAF N B00-05			Air Quality		7de	45		
Ice Chest No. ERC 01 027		Logbook No. 1524-3		COA R1301N	2600		Metho	d of Shi	oment	IFD E	オ				
Shipped To	Offsi	te Property No.	RI	07/7	75		Bill of	Lading	Air Bill	No. NA					
POSSIBLE SAMPLE HAZARDS/REMARKS		7		1)		}]		
Radioactive		Preservation	Cool 4C	None	None	Cool		None							
Special Handling and/or Storage	•	Type of Container	PWM	in a	<u>zh</u>	1	= '	Marinelli							
None		No. of Container(s)	والواد	<u> </u>					1		<u> </u>		L		
		Volume	-60fit.	3/11/2	, MA	1	7	500mL							
			See item (1) in Special	pH (Soil) - 9045	IC Anions - 300.0 (Nitrate,	Alcoho Glycols		item (2) in Special			Ī				
SAMPLE ANAI	YSIS	•	Instructions		Nitrite Sulfate);	Ketone 8015J	s- in	structions.	ļ	ļ]	Į į		
					NO2/NO3 - 353.1	Metha	nol}	7 173							
				ļ		#3	•	13				ļ			
Sample No. Matrix *	Sample Date	Sample Time	12 TQ -77 AVEC				***					17 . "Y".			
J00JD1 SOIL	3/18/03	1980	K	K	K	X									
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				1				1							
	·			1				1							
CHAIN OF POSSESSION	Sign/Pri	nt Names		SPE	ECLAL INSTR	UCTIO	NS SNC	1			·		Matrix *		
Relinquished By/Removed Front, Date/Time 165	Received By/Sto	ored in Da	ne/Time /6	D Lab	b COA: R1301N2	:F00							S=Soll		
BBKERKON/RBKerk_ 3-18-03			-18-03							um, Cadmium, Ch			SE=Sediment SO=Solid		
Relinquished By/Removed From Date/Time REF 1A 31903 0900	Received By/Sta S)GALT	ш е	ite/Time 103 09		inganese, Nickel, : allium); Mercury			Zinc}; IC	P Metals -	6010A (Add-on) {	Arsenic, Lead,	Selenium,	St=Studge W = Water		
	Received By/Sto		ite/Time	 ⇔	Commo Spectros	scopy (C	esium 13			un 183, Europium			O≘Oil A=Air		
Relinquished By/Removed From Date/Time SSGACE MACL 31903 0900		EX		-51,	Nickel-63, Trida	on (Anno. m - H3, b	sotopic U	1), ізою тапши, С	ic Putona ioss Alpha	na Fancricium 24 , Gross De ta E.K.	3/18/03	Total-	DS=Drum Solids DL=Drum Liquids		
Relinquished By/Removed From Date/Time	Received By/St		ite/Time		Α.		·		~	: 1/01-	10 Sol	L-ML	T=Tissue Wl=Wipe		
Relinquished By/Removed From Date/Time		03/09(o (3		VO A 8260	֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓	nuge_	757.	i VOA'S	,	1	L=Liquid V=Vegetation X=Other			
Reinquisico Dyreinoved From			」.		AMP	ZE	MAT	ERIA	L IS IN	A /-	LITER_				
Relinquished By/Removed From Date/Time	Received By/Sto	ored In Da	ite/Time		1076: 51 PL	AST 7	c (onT.	HNE	e. PK	3-18-0	3	[
LABORATORY Received By SECTION			Ti	tic			re	linguist	not avail samples	lable to from the 3728 3 1 191 0 3		ate/Time	* _		
FINAL SAMPLE Disposal Method DISPOSITION			•	Dispo	sed By	^·	мк П <u>/ /</u>	VIII\	<u> </u>		Date/Time	<u></u> .			

LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Hanford

Purchase Order/Project:

DATE: 3 20 03

SAF#) SOW# / Release #: 600 +054

Laboratory SDG #:

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION Custody seals on coolers or shipping □No DNA see Comment # container intact, signed and dated? 2. Outside of coolers or shipping containers are □ No □ N/A ☐ see Comment # free from damage? Airbill # recorded? D/Yes □ No D N/A ☐ see Comment # All expected paperwork received (coc and □ No other client specific: historical data. ĽΩ′Yes D N/A ☐ see Comment # alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) Sample containers are intact? **TQ/Yes** □ No D N/A □ see Comment # Custody seals on sample containers intact, D No DNA D see Comment # signed and dated? All samples on coc received? □ No □ N/A see Comment # D No All sample label information matches coc? DN/A · 🗖 see Comment # Laboratory QC samples designated on coc? □ No D N/A ☐ see Comment # (QC stickers placed on bottles?) 10. Shipment meets LvLl Sample Acceptance ☐ Yes)EX(No D N/A 况 see Comment # \ Policy? (identify all bottles not within policy. See reverse side for policy) 11. Where applicable, bar code labels are □ Yes □ No D(N/A ☐ sec Comment # affixed to coc? □ No D N/A ☐ see Comment # 12. coc signed and dated? 13, coc will be faxed or emailed to client? M Yes D No D N/A ☐ see Comment #

☐ Yes

Cooler # / 1	temp (°C) and C	comments:
#ERC	01-027/	1560

14. Project Manager/Client contacted

concerning discrepancies? (name/date)

#1 yample vecdad 15.6°C

□ No

D-N/A

Laboratory Sample Custodian:

Laboratory Project Manager:

12

☐ see Comment #



Lionville Laboratory, Inc. GCSC ANALYTICAL DATA PACKAGE FOR TNUHANFORD B00-054 H2105

DATE RECEIVED: 03/20/03

LVL LOT # :0303L985

CLIENT ID	LVL #	мтх	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J00JD1	001	s	03LE0360	03/18/03	03/26/03	03/26/03
J00JD1	001 MS	s	03LE0360	03/18/03	03/26/03	03/26/03
J00JD1	001 MSD	s	03LE0360	03/18/03	03/26/03	03/26/03
LAB QC:						
BLK	MB1	s	03LE0360	N/A	03/26/03	03/26/03
BLK	MB1 BS	s		N/A	03/26/03	03/26/03

H23/21/3



Analytical Report

Client: TNU HANFORD B00-054

LVL#: 0303L985

SDG/SAF#: H2105/B00-054

W.O.#: 11343-606-001-9999-00

Date Received: 03-20-2003

GC SCAN

One (1) soil sample was collected on 03-18-2003.

The sample and its associated QC samples were analyzed on 03-26-2003 according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures based on method 8015B for Methanol.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from a sample that met LvLI's sample acceptance policy with the exception of a discrepancy, which has been recorded on the Sample Receipt Checklist (p-8).
- 2. The sample was analyzed within required holding time.
- 3. The method blank was below the reporting limit for the target compound.
- 4. Surrogates are not currently employed in the methodology.
- 5. The blank spike recovery was within acceptance criteria.
- 6. The matrix spike recoveries were within acceptance criteria.
- 7. All initial calibrations were within acceptance criteria.
- 8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
- 9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

r:\group\data\gcsc\tunu\0303-985.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 8 pages.



GLOSSARY OF GC SCAN DATA

DATA QUALIFIERS

- U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.



GLOSSARY OF GC SCAN DATA

- This flag is used for an GC SCAN target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
- **D** = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- C = This flag applies to a compound that has been confirmed by GC SCAN.

Lionville Laboratory, Inc.

GC SCAN

Report Date: 03/27/03 14:19

	Cust ID:	J00JD1	J00JD1	J00JD1	BLK	BLK BS	
Sample	RFW#:	001	001 MS	001 MSD	03LE0360-MB1	03LE0360-MB1	
Information	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	
	D.F.:	1.00	1.00	1.00	1.00	1.00	
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
	 **==============================	f1	fl=	f:	l=====f1	fl	======f
Methanol		26 U	92 %	91 %	25 U	94 %	

783/27/03

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Lionville Laboratory Use Only	Ì
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Custody Iransier meculu/Lab work inchases i age ______

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FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

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Lionville Lebr	vetor	Project Mana	mar (On Ond	degala.	$C_{\mathbf{L}}$		Volume		Solid	IL -										→ [
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MATRIX CODES: S - Soil SE - Sediment SO - Solid	Lab ID		Client ID/Descri	lption	Cho	C (Matrix	Date Collected	Time Collected	HAZOO	0612H			OGCSC	-		MC + ()		IPH	10,403 10,402 10,002	IN3N2				
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DL - Drum Liquids	 -	 			 -	-				 	├	 			<u> </u>										
L - EP/TCLP	 	 			 -	\vdash				}	├	 			-							 	—		
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Special Instruct	l		240 0	S. C. J.		DATE/	REVISION	is:	- 0				4 (14	VI.	0	Т		Lionvil	le Labo	oratory	Use On	ıly		
Special mediaci	10115.	SAF #	\$ BOO-C	ν3 Ψ				1. <u>5b</u> .									Sa	mples Shippe	were;		Tar	nper Resis	stant Se	al was:	
								2 V. Z	n. As	<u>. PL</u>	<u>. S</u>	<u>e, T</u>	<u>l. </u>	<u>Ha</u>			1)	Shippe and Deli	d V	. Or	1) Pa	Present ckage	Au On	iter N	
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								6										Sample operty		her	Sa	ımple 🕜	or را	N	
Relinquished		Received	Bata	Time R	elinqui	shed		Received		ate	Tir	ne		•	ies Betv		- 1-1	Opoliy 1	0	r N	N Upon Sample Rec't				
by		by	Date	ļ	by		1	by	RIG					•	abels ar			Receiv		hin	·		O or	r N	
HED EX		2 Variate	3-20-03	10910	_20	TIPC	SITE				1		COC Record? Y or (N) NOTES:				Holding Times Cooler Or N Temp. 15			<u>ما. د</u>	_ °C				
TO CA		~ } \ 1802 /	3-20-03 CR 10 WASTE REWRITTEN													<u>-</u>		•							

Bechtel Ha	unford Inc.		CHAIN OF CUST	PLE	ANALY	YSIS	RE	QUI	ST		B00-054-238 Page 1					
Collector		Com	pany Contact B Kerkow	Telephor 372-2	ne No.				Proj	ect Co	ordina	tor P	rice Code	85	Data Tu	rnaround
R B Kerkow Project Designation 100-NR-1 TSD Sites R	A. Sampling - Soil	Same	pline Location 6-N-1 Trench , Plume 8-B	- -					SAF B00-			A	ir Quali	ty 🗆	7de	cys \
Ice Chest No. ERC		Field	Logbook No. 1524-3		CO	A)1N26	00		Meti	hod of	Shipu	ent L	ĒD (Eχ		
Shipped To 7. TMA/RECRA		Offsi	ite Property No.	RIC	っフィ	17	5		ВШ	of Lad	ling/A	ir Bill No	N/A	Í		-
POSSIBLE SAMPLE I Radioactive	HAZARDS/REMARKS		Preservation	Cool 4C	L.	ине /8/6)	None	Cool		Non						
Special Handling and	Vor Storage		Type of Container	PWM	44		eh.	~~		Marin	lli					
None			No. of Container(s) Volume	-60/112 M	*//	75 175 1		7					<u> </u>			
	See ite Sp Instr						IC Anions - 300.0 (Nitrate, Nitrite, Sulfate); NO2/NO3 - 353.1	Alcoho Giycoh Keton 8015 [Metha	i, & es M moi)	See item Speci Instruct	al	_				
Sample No.	Matrix *	Sample Date	e Sample Time			935		#3								
J00JD1	SOIL	3/18/03	1000	K	, <u> </u>	(K	×		-	-					
										1						
			<u>'</u>							-						
CHAIN OF POSSI			int Names			SPEC	IAL INSTR	UCTIO	ONS						·	Matrix *
Relinquished By/Removed Property Relinquished By/Removed From Relinquished By/Removed From REF A 3 9	3-18-03 Om Date/Time	PEF 14 Received By/S	REKELKAN 3	ate/Time 169 3-18-03 ate/Time 703 09		(1) IO Mang Thalli	anese, Nickel, um]; Mercury	10A (TA Silver, V - 7471 -	anadiu (CV)	ım, Zinc	}; ICP	Metals - 60	10A (Add-oi	Chromium, Co a) {Arsenic, Le am 154, Europ	ad, Scienium,	S=Soil SE=Sediment SO=Solid St=Sludge W = Water O=Oil
Relinquished By/Removed Fro	-31903 0900	Received By/S	EX	ate/Time		Cum	w Spec Add	on (Am	ricium	- 241 , 1	sotopic	Piotonian	Autoricione	24. 34 min	-89,90 Total	A=Air DS=Drum Solids DL=Drum Liquids
Relinquished By/Removed From Date/Time Received By/Stored In Date/Time Relinquished By/Removed From Date/Time Received By/Stored In Date/Time Received By/Stored In Date/Time						(3)	ADD:	VO / 826) (0)	an	. s	SEMI 82	VOAS	ک سر . ه	OIL-PR 1-LITER 1-03	T=Tissue Wi=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From Date/Time Received By/Stored In Date/Time						1/2	TE: 5	AST	9LE IC	Co	9TE NTA	RIAL INER	15 1 P	~ ~ 1 K 3 +8	-03	
LABORATORY Reco	cived By			Т	ide		· ·			Perso relino	nnel i Juish :	ot availa amples f		28	Date/Time	
FINAL SAMPLE DispOSITION	posal Method						Dispo	osed By		//		_ • •	. <u>,,,,,</u>		Date/Time	

LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Hanford

Purchase Order/Project:

DATE: 3.20.03

(SAF#) SOW# / Release #: 600 .054

Laboratory SDG #:

1	Custody seals on coolers or shipping	N/Y es		ENT SECTION	
1.	container intact, signed and dated?	Ly 16	□ No	D N/A	☐ see Comment #
2.	Outside of coolers or shipping containers are free from damage?	Yes	□ No	D N/A	see Comment #
3.	Airbill # recorded?	Yes	□ N ₀	□ N/A	☐ see Comment #
4.	All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	D/Yes	□ No	□ N/A	☐ see Comment#
5. .	Sample containers are intact?	TSYYES	□ No	□ N/A	□ see Comment #
6.	Custody seals on sample containers intact, signed and dated?	DYYes	□ N ₀	□ N/A	□ see Comment #
7.	All samples on coc received?	Yes	□ No	□ N/A	· D see Comment is
8.	All sample label information matches coc?	Yes	□ÿo	□ N/A·	· D see Comment
9.	Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	byves	□ No	□ N/A	See Comment
10.	Shipment meets LvLI Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	□ Yes	DE(No	□ N/A	♥ see Comment
11.	Where applicable, bar code labels are affixed to coc?	□ Yes	□ No	ÞÝNA	☐ see Comment
12.	coc signed and dated?	Yes	□ No	DNA	🗆 see Comment
13.	coc will be faxed or emailed to client?	C Yes	□ No	□ N/A	□ see Comment
14.	Project Manager/Client contacted concerning discrepancies? (name/date)	□ Yes	□ No	GNA	☐ see Commen

Laboratory Sample Custodian:

Laboratory Project Manager:



Lionville Laboratory, Inc. INORGANIC ANALYTICAL DATA PACKAGE FOR TNUHANFORD B00-054 H2105

DATE RECEIVED: 03/20/03 LVL LOT # :0303L985

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J00 J D1						
SILVER, TOTAL	001	s	03L0157	03/18/03	03/25/03	03/26/03
SILVER, TOTAL	001 REP	S	03L0157	03/18/03	03/25/03	03/26/03
SILVER, TOTAL	001 MS	S	03L0157	03/18/03	03/25/03	03/26/03
ARSENIC, TOTAL	001	S	03L0157	03/18/03	03/25/03	03/26/03
ARSENIC, TOTAL	001 REP	S	03L0157	03/18/03	03/25/03	03/26/03
ARSENIC, TOTAL	001 MS	S	03L0157	03/18/03	03/25/03	03/26/03
BARIUM, TOTAL	001	S	03L0157	03/18/03	03/25/03	03/26/03
BARIUM, TOTAL	001 REP	S	03L0157	03/18/03	03/25/03	03/26/03
BARIUM, TOTAL	001 MS	S	03L0157	03/18/03	03/25/03	03/26/03
BERYLLIUM, TOTAL	001	S	03L0157	03/18/03	03/25/03	03/26/03
BERYLLIUM, TOTAL	001 REP	S	03L0157	03/18/03	03/25/03	03/26/03
BERYLLIUM, TOTAL	001 MS	S	03L0157	03/18/03	03/25/03	03/26/03
CADMIUM, TOTAL	001	S	03L0157	03/18/03	03/25/03	03/26/03
CADMIUM, TOTAL	001 REP	S	03L0157	03/18/03	03/25/03	03/26/03
CADMIUM, TOTAL	001 MS	S	03L0157	03/18/03	03/25/03	03/26/03
CHROMIUM, TOTAL	001	S	03L0157	03/18/03	03/25/03	03/26/03
CHROMIUM, TOTAL	001 REP	S	03L0157	03/18/03	03/25/03	03/26/03
CHROMIUM, TOTAL	001 MS	S	03L0157	03/18/03	03/25/03	03/26/03
COPPER, TOTAL	001	S	03L0157	03/18/03	03/25/03	03/26/03
COPPER, TOTAL	001 REP	S	03L0157	03/18/03	03/25/03	03/26/03
COPPER, TOTAL	001 MS	s	03L0157	03/18/03	03/25/03	03/26/03
MERCURY, TOTAL	001	S	03C0058	03/18/03	03/24/03	03/24/03
MERCURY, TOTAL	001 REP	S	03C0058	03/18/03	03/24/03	03/24/03
MERCURY, TOTAL	001 MS	S	03C0058	03/18/03	03/24/03	03/24/03
MANGANESE, TOTAL	001	s	03L0157	03/18/03	03/25/03	03/26/03
MANGANESE, TOTAL	001 REP	S	03L0157	03/18/03	03/25/03	03/26/03
MANGANESE, TOTAL	001 MS	S	03L0157	03/18/03	03/25/03	03/26/03
NICKEL, TOTAL	001	s	03L0157	03/18/03	03/25/03	03/26/03
NICKEL, TOTAL	001 REP	S	03L0157	03/18/03	03/25/03	03/26/03
NICKEL, TOTAL	001 MS	s	03L0157	03/18/03	03/25/03	03/26/03
LEAD, TOTAL	001	s	03L0157	03/18/03	03/25/03	03/26/03
LEAD, TOTAL	001 REP	S	03L0157	03/18/03	03/25/03	03/26/03
LEAD, TOTAL	001 MS	S	03L0157	03/18/03	03/25/03	03/26/03
ANTIMONY, TOTAL	001	S	03L0157	03/18/03	03/25/03	03/26/03
ANTIMONY, TOTAL	001 REP	s	03L0157	03/18/03	03/25/03	03/26/03

Lionville Laboratory, Inc. INORGANIC ANALYTICAL DATA PACKAGE FOR TNUHANFORD B00-054 H2105

DATE RECEIVED: 03/20/03 LVL LOT # :0303L985

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ANTIMONY, TOTAL	001 MS	s	03L0157	03/18/03	03/25/03	03/26/03
SELENIUM, TOTAL	001	S	03L0157	03/18/03	03/25/03	03/26/03
SELENIUM, TOTAL	001 REP	S	03L0157	03/18/03	03/25/03	03/26/03
SELENIUM, TOTAL	001 MS	s	03L0157	03/18/03	03/25/03	03/26/03
THALLIUM, TOTAL	001	S	03L0157	03/18/03	03/25/03	03/26/03
THALLIUM, TOTAL	001 REP	s	03L0157	03/18/03	03/25/03	03/26/03
THALLIUM, TOTAL	001 MS	S	03L0157	03/18/03	03/25/03	03/26/03
VANADIUM, TOTAL	001	S	03L0157	03/18/03	03/25/03	03/26/03
VANADIUM, TOTAL	001 REP	S	03L0157	03/18/03	03/25/03	03/26/03
VANADIUM, TOTAL	001 MS	S	03L0157	03/18/03	03/25/03	03/26/03
ZINC, TOTAL	001	s	03L0157	03/18/03	03/25/03	03/26/03
ZINC, TOTAL	001 REP	S	03L0157	03/18/03	03/25/03	03/26/03
ZINC, TOTAL	001 MS	S	03L0157	03/18/03	03/25/03	03/26/03

LAB QC:

SILVER LABORATORY	LC1	BS	S	03L0157	N/A	03/25/03	03/26/03
SILVER, TOTAL	MB1		S	03L0157	N/A	03/25/03	03/26/03
ARSENIC LABORATORY	LC1	BS	S	03L0157	N/A	03/25/03	03/26/03
ARSENIC, TOTAL	MB1		S	03L0157	N/A	03/25/03	03/26/03
BARIUM LABORATORY	LC1	BS	S	03L0157	N/A	03/25/03	03/26/03
BARIUM, TOTAL	MB1		s	03L0157	N/A	03/25/03	03/26/03
BERYLLIUM LABORATORY	LC1	BS	s	03L0157	N/A	03/25/03	03/26/03
BERYLLIUM, TOTAL	MB1		s	03L0157	N/A	03/25/03	03/26/03
CADMIUM LABORATORY	LC1	BS	S	03L0157	N/A	03/25/03	03/26/03
CADMIUM, TOTAL	MB1		S	03L0157	N/A	03/25/03	03/26/03
CHROMIUM LABORATORY	LC1	BS	s	03L0157	N/A	03/25/03	03/26/03
CHROMIUM, TOTAL	MB1		S	03L0157	N/A	03/25/03	03/26/03
COPPER LABORATORY	LC1	BS	S	03L0157	N/A	03/25/03	03/26/03
COPPER, TOTAL	MB1		s	03L0157	N/A	03/25/03	03/26/03
MERCURY LABORATORY	LC1	BS	S	03C0058	N/A	03/24/03	03/24/03
MERCURY, TOTAL	MB1		s	03C0058	N/A	03/24/03	03/24/03
MANGANESE LABORATORY		BS	s	03L0157	N/A	03/25/03	03/26/03
MANGANESE, TOTAL	MB1		s	03L0157	N/A	03/25/03	03/26/03
NICKEL LABORATORY	LC1	BS	s	03L0157	N/A	03/25/03	03/26/03
NICKEL, TOTAL	MB1		s	03L0157	N/A	03/25/03	03/26/03
LEAD LABORATORY	LC1	BS	s	03L0157	N/A	03/25/03	03/26/03
LEAD, TOTAL	MB1		S	03L0157	N/A	03/25/03	03/26/03
,							

Lionville Laboratory, Inc. INORGANIC ANALYTICAL DATA PACKAGE FOR TNUHANFORD B00-054 H2105

DATE RECEIVED: 03/20/03 LVL LOT # :0303L985

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
						
ANTIMONY LABORATORY	LC1 BS	S	03L0157	N/A	03/25/03	03/26/03
ANTIMONY, TOTAL	MB1	S	03L0157	N/A	03/25/03	03/26/03
SELENIUM LABORATORY	LC1 BS	S	03L0157	N/A	03/25/03	03/26/03
SELENIUM, TOTAL	MB1	S	03L0157	N/A	03/25/03	03/26/03
THALLIUM LABORATORY	LC1 BS	S	03L0157	N/A	03/25/03	03/26/03
THALLIUM, TOTAL	MB1	S	03L0157	N/A	03/25/03	03/26/03
VANADIUM LABORATORY	LC1 BS	S	03L0157	N/A	03/25/03	03/26/03
VANADIUM, TOTAL	MB1	s	03L0157	N/A	03/25/03	03/26/03
ZINC LABORATORY	LC1 BS	S	03L0157	N/A	03/25/03	03/26/03
ZINC, TOTAL	MB1	S	03L0157	N/A	03/25/03	03/26/03



Analytical Report

Client: TNU-HANFORD B00-054

LVL#: 0303L985

SDG/SAF#: H2105/B00-054

W.O.#: 11343-606-001-9999-00

Date Received: 03-20-03

METALS CASE NARRATIVE

1. This narrative covers the analyses of 1 soil sample.

- 2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.
- 3. All analyses were performed within the required holding times.
- 4. Please refer to the Sample Receipt Check List for sample discrepancies in LvLI's sample acceptance policy.
- 5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
- 6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
- 7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
- 8. All ICP Interference Check Standards were within control limits.
- 9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.
- 10. The matrix spike (MS) recoveries for 2 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.
- 11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration level for the following analytes:

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of pages.

		<u>PDS</u>	<u>PDS</u>
Sample ID	Element	Concentration (ppb)	% Recovery
J00JD1	Manganese	1000	109.7
	Antimony	100	107.6

- The duplicate analyses for 5 analytes were outside the 20% Relative Percent Difference 12. (RPD) control limits. Refer to the Inorganics Precision Report.
- 13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.
- 14. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

jjw/m03-985



METALS METHOD GLOSSARY

The following m Lot#: 0303L98		eference for the digest	ion and analysis	of sample	s contained within this
Leaching Proced	lure:13101311	1312Other:	<u></u>		
CLP Metals I	Digestion and Analy	ysis Methods:ILM	[03.0ILM04.	0	
Metals Digestion	Methods:3005A Other	3010A3015	3020A <u>⊁</u> 3050B	3051	200.7SS17
		Metals Analysis M	Tethods		
		Metals Alialysis I	t tilous	EPA	
	SW846	EPA	STD MTD	OSWR	USATHAMA
Aluminum	6010B	200.7	, 22		99
Antimony	√ 6010B 7041				99
Arsenic	≠ 6010B7060				<u></u> 99
Barium	7 6010B	200.7			99
Beryllium	<u>≻</u> 6010B			•	99
Bismuth	6010B ¹	200.7 ¹		1620	99
Boron	6010B	200.7			99
Cadmium	₹6010B7131	A ⁵ 200.7213.2			99
Calcium	6010B	200.7			99
Chromium	<u>×6010B</u> 7191				SS17
Cobalt	6010B	200.7			99
Copper	<u>~6010B</u> _7211				99
Iron	6010B	200.7	#44 7 D		99
Lead	<u>⊀</u> 6010B7421		3113B	1/20	_99
Lithium	_6010B7430			$-^{1620}$	99 99
Magnesium	6010B	200.7			⁹⁹
Manganese	№6010B	200.7	2		99
Mercury	7470A 3 1 747	1A ³ 245.1 ² 245.5 200.7	_		99
Molybdenum	6010B <u>▼</u> 6010B	200.7 200.7			99
Nickel	6010B7610		4		
Potassium	6010B 1 7010	200.7238.1		1620	99
Rare Earths Selenium	√ 6010B 7740		3113B		99
Silicon	6010B '	200.7		1620	- 99
Silica	6010B	200.7		1620	99
Silver	天6010B7761			_	 99
Sodium	6010B 7770				99
Strontium	6010B	200.7			<u></u> 99
Thallium	√ 6010B7841		200.9		99
Tin	6010B				99
Titanium	6010B	200.7			99
Uranium	6010B ¹	200.7 ¹		1620	99
Vanadium	<u></u> 6010B	200.7			99
Zinc	<u>₹</u> 6010B	200.7			99

200.7 1

Method:

__6010B ¹

Zirconium

Other:_

6

-99

L-WI-033/M-03/01

1620

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- * = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LCS = Laboratory Control Sample.

NC = Not calculated.

ANALYTICAL METAL METHODS

- 1. Not included in the method element list.
- 2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, approximately 0.3 grams of sample is taken to a final volume of 50 mL (including all reagents).
- 3. Flame AA.
- 4. Graphite Furnace AA.

L-WI-033/N-04/98

INORGANICS DATA SUMMARY REPORT 03/27/03

CLIENT: TNUHANFORD B00-054 H2105 WORK ORDER: 11343-606-001-9999-00

	sk: 11343-606-001-9999-			*****	REPORTING	DILUTION FACTOR
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	
*****	********	医亚多拉氏 医医胃医炎 计二进程 医耳唇征 开起 医足迹		****		*******
-001	J00JD1	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	3.1	MG/KG	0.39	1.0
		Barium, Total	49.5	MG/KG	0.01	1.0
		Beryllium, Total	0.10	MG/KG	0.01	1.0
		Cadmium, Total	0.1	MG/KG	0.04	1.0
		Chromium, Total	11.9	MG/KG	0.07	1.0
		Copper, Total	16.4	MG/KG	0.07	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Manganese, Total	285	MG/KG	0.02	1.0
		Nickel, Total	12.2	MG/KG	0.20	1.0
		Lead, Total	3.6	MG/KG	0.29	1.0
		Antimony, Total	0.28 u	MG/KG	0.28	1.0
		Selenium, Total	0.40 u	MG/KG	0.40	1.0
		Thallium, Total	0.53	MG/KG	0.40	1.0
		Vanadium, Total	39.4	MG/KG	0.01	1.0
		Zinc, Total	40.0	MG/KG	0.15	1.0

INORGANICS METHOD BLANK DATA SUMMARY PAGE 03/27/03

CLIENT: TNUHANFORD B00-054 H2105 WORK ORDER: 11343-606-001-9999-00

					REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	PACTOR
3 C = = = = = =	**********		222222	======	*******	
BLANK1	03L0157-MB1	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	0.35 u	MG/KG	0.35	1.0
		Barium, Total	0.03	MG/KG	0.01	1.0
		Beryllium, Total	0.03	MG/KG	0.01	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	0.06 u	MG/KG	0.06	1.0
		Copper, Total	0.06 u	MG/KG	0.06	1.0
		Manganese, Total	0.02	MG/KG	0.02	1.0
		Nickel, Total	0.18 u	MG/KG	0.18	1.0
		Lead, Total	0.26 u	MG/KG	0.26	1.0
		Antimony, Total	0.25 u	MG/KG	0.25	1.0
		Selenium, Total	0.36 u	MG/KG	0.36	1.0
		Thallium, Total	0.36 u	MG/KG	0.36	1.0
		Vanadium, Total	0.22	MG/KG	0.01	1.0
		Zinc, Total	0.94	MG/KG	0.14	1.0
BLANK1	03C0058-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

INORGANICS ACCURACY REPORT 03/27/03

CLIENT: TNUHANPORD B00-054 H2105 WORK ORDER: 11343-606-001-9999-00

			SPIKED	INITIAL	SPIKED		DILUTION
SAMPLE	SITE ID	ANALYTE	SAMPLE	RESULT	THUOMA	*RECOV	Factor (SPK)
*****				****	****		2225742322
-001	J00JD1	Silver, Total	5.0	0.09u	5.3	94.3	1.0
		Arsenic, Total	208	3.1	210	97.3	1.0
		Barium, Total	248	49.5	210	94.5	1.0
		Beryllium, Total	5.1	0.10	5.3	94.3	1.0
		Cadmium, Total	5.2	0.1	5.3	96.3	1.0
		Chromium, Total	33.5	11.9	21.0	102.9	1.0
		Copper, Total	42.0	16.4	26.3	97.3	1.0
		Mercury, Total	0.15	0.01u	0.15	105.5	1.0
		Manganese, Total	353	285	52.5	130.7*	1.0
		Nickel, Total	65.2	12.2	52.5	101.0	1.0
		Lead, Total	54.4	3.6	52.5	96.8	1.0
		Antimony, Total	26.1	0.28u	52.5	49.7	1.0
		Selenium, Total	203	0. 40 u	210	96.5	1.0
		Thallium, Total	202	0.53	210	95.9	1.0
		Vanadium, Total	90.5	39.4	52.5	97.3	1.0
		Zinc, Total	91.6	40.0	52.5	98.3	1.0

INORGANICS PRECISION REPORT 03/27/03

CLIENT: TNUHANFORD B00-054 H2105

WORK	ORDER:	11343-606-001-9999-00

			INITIAL				DILUTION ,
SAMPLE	SITE ID	ANALYTE	RESULT	REPLICATE	RPD		PACTOR (RBP)
******	******	******					表现的现在分词
-001REP	J00JD1	Silver, Total	0.09u	0.08u	NC		1.0
		Arsenic, Total	3.1	3.7	17.6		1.0
		Barium, Total	49.5	48.7	1.6		1.0
		Beryllium, Total	0.10	0.14	29.3		1.0
		Cadmium, Total	0.1	0.14	38.4		1.0
		Chromium, Total	11.9	16.6	33.0		1.0
		Copper, Total	16.4	17.2	4.8		1.0
		Mercury, Total	0.01u	0.02u	NC		1.0
		Manganese, Total	285	. 307	7.5		1.0
		Nickel, Total	12.2	15.2	21.9		1.0
		Lead, Total	3.6	3.7	2.7		1.0
		Antimony, Total	0.28u	0.26u	NC		1.0
		Selenium, Total	0.40u	0.37u	NC	_	1.0
		Thallium, Total	0.53	0.37u	سيهلا	200	1.0
		Vanadium, Total	39.4	44.4	11.9	1/28/03	1.0
		Zinc, Total	40.0	43.2	7.7	1 4	1.0

INORGANICS LABORATORY CONTROL STANDARDS REPORT 03/27/03

CLIENT: TNUHANFORD B00-054 H2105

WORK , ORDER :	11343-606-001-9999-00

			SPIKED	SPIKED		
SAMPLE	SITE ID	ANALYTE	SAMPLE	AMOUNT	UNITS	*RECOV
	**************		EEE##=	-		E====
LCS1	03L0157-LC1	Silver, LCS	50.5	50.0	MG/KG	101.0
		Arsenic, LCS	995	1000	MG/KG	99.5
		Barium, LCS	514	500	MG/KG	102.8
		Beryllium, LCS	24.5	25.0	MG/KG	98.0
		Cadmium, LCS	25.6	25.0	MG/KG	102.4
		Chromium, LCS	51.7	50.0	MG/KG	103.4
		Copper, LCS	128	125	MG/KG	102.8
		Manganese, LCS	78.3	75.0	MG/KG	104.4
		Nickel, LCS	208	200	MG/KG	104.0
		Lead, LCS	254	250	MG/KG	101.7
		Antimony, LCS	303	300	MG/KG	100.9
		Selenium, LCS	962	1000	MG/KG	96.2
		Thallium, LCS	1000	1000	MG/KG	100.3
		Vanadium, LCS	257	250	MG/KG	102.9
		Zinc, LCS	102	100	MG/KG	102.1
LCS1	03C0058-LC1	Mercury, LCS	7.1	6.2	MG/KG	113.6

Lionville	Laboratory	Use	Only

Custody Transfer Record/Lab Work Request Page 1 of 1

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FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS



Client TNU Hamford 800-054						Refriger	etor#		Ь																
Est. Final Proj								#/Type /	Container	Liquid															
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Special Instruct	ilons:	SAF #	BAO - 0	754			DATE/	REVISION	NS:	о В		16		<i>c</i>	Μ.	N.	A			Lionvi	lie Lab	oratory	Use C	nly	
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den E	1.6	D.V. min DV.C	3-20-03	OPRO] [(O)	PC	SITE		EWO	I MOTEC:			, H	Holding Times Y or N				mp. 1	<u>ما. 3</u>	_ °C				

Bechtel Hanf	ord Inc.	C	HAIN OF CUST	TODY/S	AMPLE	ANAL	YSIS	RE()UE	ST	T _	B00	-054-238	Page 1	of 1	
Collector R B Kerkow		Comp	any Contact Kerkow	Telephor 372-2	ie No.				ct Coo	dinator	Pric	Price Code 8 J		Data Turnaround		
Project Designation 100-NR-1 TSD Sites R. A.	Sampling - Soil		ling Location -N-1 Trench , Plume 8-B	(container	/33)			SAF			Air	Quality		7de	cys	
Ice Chest No. ERC C	1 027		Logbook No. 1524-3		COA R1301N26	500		Meth	od of S	hipment	FED EX					
Shipped To ToTMA/RECRA		Offsit	Offsite Property No. RSR 107175 Bill of Lading/Air Bill No. N								NA					
POSSIBLE SAMPLE HAZ	ZARDS/REMARKS		1	<u> </u>			<u> </u>									
Radioactive			Preservation	Cool 4C	None	None	Cool		None	}	Ì			}		
Special Handling and/or	: Storage		Type of Container	PWM	au.	茈	*		Marine	li li						
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	SAMPLE ANA	LYSIS		See item (1) in Special Instructions.	pH (Soil) - 9045	IC Anions - 300.0 (Nitrate, Nitrite, Sulfate); NO2/NO3 - 353.1	Alcoho Glycola Ketone 80151 (Metha + Sea	t, da es - M mol)	ce item (2 Special Instructio							
Sample No.	Sample Date	Sample Time				74						1				
J00JD1	SOIL	3/18/03	1980	K	K	K	×	-	+	-				 -		
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CHAIN OF POSSESS	HON	Sign/Prin	it Names	<u> </u>	SPEC	CIAL INSTR	UCTIO						<u> </u>	<u> </u>	Matrix *	
Relinquished By/Removed From REF 1A 3190 Relinquished By/Removed From SIGNE 1 A SIGNE	Date/Time /65 2-18-03 Date/Time 3-0900	Received By/Sto SJGALt Received By/Sto FED Received By/Sto	red in D red in D red in D red in D red in D red in D red in D red in D red in D red in D red in D red in D red in D	hate/Time hate/Time hate/Time hate/Time hate/Time	Lab (1) In Many Thail (2) (2) (3) (3)	COA: R1301N2 CP Metals - 60 ganese, Nickel, itum); Mercury	2F00 10A (TAI Silver, V - 7471 - (L) {Anti- anadium (CV) beium sotopic S O) CEE	n, Zinc}; 27, Cob M1); Isc Uranium MA Com	ICP Metal	s-6010/spiem 15 mian, As Ma, Gra Mi	A (Add-on) S.G. Europian merician 24 s.s. Bota P.K JOA's JOA's JOA'S JOA'S JOA'S JOA'S	1 A 1- 3-18-0	Selenium, 1554: 190 Total LITER 3	S=Soil SB=Sediment SO=Solid SI=Studge W = Weter C=Oil A=Air DS=Drum Solids DL=Drum Liquid T=Tissue W1=Wipe L=Liquid V=Veget#ion X=Other	
LABORATORY Received SECTION	Ву			Ti	tic			1	relingu	ish sampi	es fron	: to n the 372 <u>8</u> <i>1910</i>		Vate/Time		
FINAL SAMPLE Disposal	Method					Dispo	sed By		· · · · · ·			 .	1	Date/Time		

LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Hanford

Purchase Order/Project:

DATE: 3 20 03

SAF#) SOW# / Release #: 800 -054

Laboratory SDG #:

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION Custody seals on coolers or shipping D/Yes □ No O N/A see Comment # container intact, signed and dated? Outside of coolers or shipping containers are □ No □ N/A ☐ sec Comment # free from damage? Airbill # recorded? □ No D N/A ☐ see Comment # All expected paperwork received (coc and D'Yes D No other client specific: historical data, D N/A See Comment # alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) Sample containers are intact? D No D N/A ☐ see Comment # Custody seals on sample containers intact, □ N/A ☐ see Comment # signed and dated? All samples on coc received? □ No □ N/A ☐ see Comment # All sample label information matches coc? □ No D N/A see Comment # Laboratory QC samples designated on coc? D No DN/A ☐ see Comment # (QC stickers placed on bottles?) 10. Shipment meets LvLI Sample Acceptance □ Yes `¤(No D N/A 📆 sec Comment # 🚶 Policy? (identify all bottles not within policy. See reverse side for policy) 11. Where applicable, bar code labels are ☐ Yes D No DEN/A ☐ see Comment # affixed to coc? YQ∕Yes □ No 12. coc signed and dated? DNA see Comment #

Yes

□ Yes

□ No

□ No

Cooler # /	temp (°C) and	Comments:
#ERC	01-027	1560

13. coc will be faxed or emailed to client?

concerning discrepancies? (name/date)

14. Project Manager/Client contacted

#1 sample recio al

□ N/A

D-N/A

Laboratory Sample Custodian:

Laboratory Project Manager:

D see Comment #

See Comment #



Lionville Laboratory, Inc. INORGANIC ANALYTICAL DATA PACKAGE FOR TNUHANFORD B00-054 H2105

JOOJD1 * SOLIDS	DATE RECEIVED: 03/2	20/03			:	LVL LOT # :0303L985					
\$ SOLIDS 001 S 031&S038 03/18/03 03/20/03 03/21/03 NITRITE BY IC 001 S 03LICA18 03/18/03 03/21/03 03/21/03 NITRITE BY IC 001 REP S 03LICA18 03/18/03 03/21/03 03/21/03 NITRITE BY IC 001 MS S 03LICA18 03/18/03 03/21/03 03/21/03 NITRATE BY IC 001 S 03LICA18 03/18/03 03/21/03 03/21/03 NITRATE BY IC 001 REP S 03LICA18 03/18/03 03/21/03 03/21/03 NITRATE BY IC 001 REP S 03LICA18 03/18/03 03/21/03 03/21/03 NITRATE BY IC 001 MS S 03LICA18 03/18/03 03/21/03 03/21/03 NITRATE BY IC 001 MS S 03LICA18 03/18/03 03/21/03 03/21/03 SULFATE BY IC 001 REP S 03LICA18 03/18/03 03/21/03 03/21/03 SULFATE BY IC 001 REP S 03LICA18 03/18/03 03/21/03 03/21/03 SULFATE BY IC 001 MS S 03LICA18 03/18/03 03/21/03 03/21/03 NITRATE NITRITE 001 S 03LICA18 03/18/03 03/21/03 03/21/03 NITRATE NITRITE 001 S 03LICA18 03/18/03 03/27/03 03/27/03 NITRATE NITRITE 001 S 03LICA18 03/18/03 03/27/03 03/27/03 NITRATE NITRITE 001 S 03LICA18 03/18/03 03/27/03 03/27/03 NITRATE NITRITE 001 REP S 03LICA18 03/18/03 03/27/03 03/27/03 NITRATE NITRITE 001 S 03LICA18 03/18/03 03/27/03 03/27/03 NITRATE NITRITE 001 S 03LICA18 03/18/03 03/27/03 03/27/03 NITRATE NITRITE 001 S 03LICA18 03/18/03 03/27/03 03/27/03 NITRATE NITRITE 001 S 03LICA18 03/18/03 03/27/03 03/27/03 NITRATE NITRITE 001 S 03LICA18 N/A 03/21/03 03/27/03 NITRATE NITRITE 001 S 03LICA18 N/A 03/21/03 03/27/03 NITRATE BY IC MB1 BS S 03LICA18 N/A 03/21/03 03/27/03 NITRATE BY IC MB1 BS S 03LICA18 N/A 03/21/03 03/21/03 NITRATE BY IC MB1 BS S 03LICA18 N/A 03/21/03 03/21/03 NITRATE BY IC MB1 BS S 03LICA18 N/A 03/21/03 03/21/03 NITRATE BY IC MB1 BS S 03LICA18 N/A 03/21/03 03/21/03 NITRATE BY IC MB1 BS S 03LICA18 N/A 03/21/03 03/21/03 NITRATE BY IC MB1 BS S 03LICA18 N/A 03/21/03 03/21/03 NITRATE BY IC MB1 BS S 03LICA18 N/A 03/21/03 03/21/03 NITRATE BY IC MB1 BS S 03LICA18 N/A 03/21/03 03/21/03 NITRATE BY IC MB1 BS S 03LICA18 N/A 03/21/03 03/21/03 NITRATE BY IC MB1 BS S 03LICA18 N/A 03/21/03 03/21/03 NITRATE BY IC MB1 BS S 03LICA18 N/A 03/21/03 03/21/03	CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS				
* SOLIDS 001 REP S 03L*S038 03/18/03 03/20/03 03/21/03 NITRITE BY IC 001 S 03LICA18 03/18/03 03/21/03 03/21/03 NITRITE BY IC 001 REP S 03LICA18 03/18/03 03/21/03 03/21/03 NITRITE BY IC 001 MS S 03LICA18 03/18/03 03/21/03 03/21/03 NITRATE BY IC 001 MS S 03LICA18 03/18/03 03/21/03 03/21/03 NITRATE BY IC 001 S 03LICA18 03/18/03 03/21/03 03/21/03 NITRATE BY IC 001 REP S 03LICA18 03/18/03 03/21/03 03/21/03 NITRATE BY IC 001 MS S 03LICA18 03/18/03 03/21/03 03/21/03 SULFATE BY IC 001 S 03LICA18 03/18/03 03/21/03 03/21/03 SULFATE BY IC 001 REP S 03LICA18 03/18/03 03/21/03 03/21/03 SULFATE BY IC 001 MS S 03LICA18 03/18/03 03/21/03 03/21/03 SULFATE BY IC 001 MS S 03LICA18 03/18/03 03/21/03 03/21/03 NITRATE NITRITE 001 S 03LN3A18 03/18/03 03/27/03 03/27/03 NITRATE NITRITE 001 REP S 03LN3A18 03/18/03 03/27/03 03/27/03 PH 001 S 03LN3A18 03/18/03 03/27/03 03/27/03 PH 001 S 03LPH023 03/18/03 03/27/03 03/27/03 DITRATE NITRITE 001 REP S 03LDA318 03/18/03 03/27/03 03/27/03 CANORDO	J00JD1	·									
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Analytical Report

Client: TNU-HANFORD B00-054 H2105

W.O.#: 11343-606-001-9999-00

LVL#: 0303L985

Date Received: 03-20-03

INORGANIC NARRATIVE

1. This narrative covers the analyses of 1 soil sample.

- 2. The sample was prepared and analyzed in accordance with the methods indicated on the attached glossary.
- 3. Sample holding times as required by the method and/or contract were met.
- 4. The results presented in this report are derived from samples that did not meet LvLI's sample acceptance policy as noted on the Sample Receipt Checklist.
- 5. The method blanks were within the method criteria.
- 6. The Laboratory Control Samples (LCS) were within the laboratory control limits.
- 7. The matrix spike recoveries for Nitrate, Nitrite, Sulfate and Nitrate Nitrite were within the 75-125% control limits.
- 8. The replicate analyses for Percent Solids, Nitrate, Nitrite, Sulfate, Nitrate Nitrite and pH were within the 20% Relative Percent Difference (RPD) control limit.
- 9. Results for solid samples are reported on a dry weight basis.
- 10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

23-31

Laboratory Manager

Lionville Laboratory Incorporated

njp\i03-985

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 11 pages.

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	<u>ASTM</u>	<u>SW846</u>	<u>OTHER</u>
% Ash	D2216-80		
% Moisture	D2216-80		ILMO4.0 (e)
% Solids	D2216-80		ILMO4.0 (e)
% Volatile Solids	D2216-80		
ASTM Extraction in Water	D3987-81/85		
BTU	D240-87		
·CEC	D240-07	9081	C
Chromium VI	•	3060A/7196A	_ c
		1110(mod) 9045C	
Corrosivity by coupon by pH		9010B	ILMO4.0 (e)
Cyanide, Total		Section 7.3/9014	_ 1LIVIO4.0 (e)
Cyanide, Reactive			EDA 600/4/04 000
Halides, Extractable Organic	•	9020B	EPA 600/4/84-008
Halides, Total		9020B	EPA 600/4/84-008
EP Toxicity		1310A	
Flash Point		1010	
Ignitability		1010	
Oil & Grease	•	9071A	
Carbon, Total Organic		9060	Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	D240-87(mod)		
Petroleum Hydrocarbons, Total Rec	coverable	/ 9071	EPA 418.1
pH, Soil		√ 9045C	
Sulfide, Reactive		Section 7.3/9030B	
Sulfide	•	9030B(mod)	
Specific Gravity	D1429-76C/ _	D5057-90	
Sulfur, Total		9056	
Synthetic Preparation Leach		1312	
Paint Filter		9095A	
Other: Atrate Attite Au	lete Method:		
Other: Attrate Netsite) Method &	PA 353.2 (mod.)	

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METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- * = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LC = Laboratory Control Sample.

NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

- ASTM Standard Methods.
- 2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
- Test Methods for Evaluating Solid Waste (USEPA SW-846).
- a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).
- b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).
- c. <u>Method of Soil Analysis</u>, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).
- d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).
- e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
- f. Code of Federal Regulations.

INORGANICS DATA SUMMARY REPORT 03/28/03

CLIENT: TNUHANFORD B00-054 H2105

LVL LOT #: 0303L985

					REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
	******				ECEREUS 62	
-001	J00JD1	* Solids	89.8	*	0.01	1.0
		Nitrite by IC	1.39 u	MG/KG	1.39	1.0
		Nitrate by IC	15.3	MG/KG	1.39	1.0
		Sulfate by IC	138	MG/KG	13.9	10.0
		Nitrate Nitrite	4.2	MG/KG	0.20	1.0
		На	8.5	PH UNIT	0.01	1.0

INORGANICS METHOD BLANK DATA SUMMARY PAGE 03/28/03

CLIENT: TNUHANFORD B00-054 H2105

LVL LOT #: 0303L985

WORK ORDI	EK: 11343-606-001-3333-	••			REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
****			******	-=====		******
BLANK10	03LICA18-MB1	Nitrite by IC	1.25 u	MG/KG	1.25	1.0
		Nitrate by IC	1.25 u	MG/KG	1.25	1.0
		Sulfate by IC	1.2 u	MG/KG	1.2	1.0
BLANK10	03LN3A18-MB1	Nitrate Nitrite	0.20 u	MG/KG	0.20	1.0

INORGANICS ACCURACY REPORT 03/28/03

CLIENT: TNUHANFORD B00-054 H2105 LVL LOT #: 0303L985

			SPIKED	INITIAL	SPIKED		DILUTION	
SAMPLE	SITE ID	ANALYTE	SAMPLE	RESULT	TRUOMA	∜RECOV	Factor (SPK)	
*****						*****		
-001	J00JD1	Nitrite by IC	29.8	1.39u	28.0	106.6	1.0	
		Nitrate by IC	45.1	15.3	28.0	106.6	1.0	
		Sulfate by IC	425	138	278	103.1	10.0	
		Nitrate Nitrite	9.2	4.2	5.5	92.5	1.0	
BLANK10	03LICA18-MB1	Nitrite by IC	24.4	1.25u	25.0	97.6	1.0	
		Nitrate by IC	23.6	1.25u	25.0	94.5	1.0	
		Sulfate by IC	24.1	1.2 u	25.0	96.5	1.0	
BLANK10	03LN3A18-MB1	Nitrate Nitrite	5.2	0.20u	5.0	103.2	1.0	

INORGANICS PRECISION REPORT 03/28/03

CLIENT: TNUHANFORD B00-054 H2105

LVL LOT #: 0303L985

			INITIAL			DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	RBPLICATE	RPD	factor (rep)
*****		***************************************	*****	*****		======================================
-001REP	J00JD1	* Solids	89.8	91.1	1.3	1.0
		Nitrite by IC	1.39u	1.39u	NC	1.0
		Nitrate by IC	15.3	17.9	15.5	1.0
		Sulfate by IC	138	156	12.1	10.0
		Nitrate Nitrite	4.2	4.7	11.6	1.0
		pН	8.5	8.6	0.6	1.0

Lionville				Only
LONVINO	Labo	41017	000	Olliy.

Custody Transfer Record/Lab Work Request Page ___ot___

03031	L985

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS



,	Client TNU Hanford Box 054 Refrigerator # b																						
Client TN	U H	unford Boo	·054			Refriger	rator #		b														
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Project Conta	ct/Phor	ne#			}	Volume	•	Liquid	ļ	<u> </u>											 		
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Special Instruct	ions:	SAF # 1300 -	054		ME	HEVISIUI .√()	1. <u>5b.</u>	Ba . B	a . C	'd . (Cr. C	u. N	Λη,	N:	Ag.	-			HE LADO		Use Or		
i							2. V. Z	- A	RL	<u> </u>	. T	0	Ha			Sa 1)	mples : Shippe	ed	or	1)	mper Resi Present	n Ou	uter
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1							6					_				4)	Sample	98		4) Unbroken on Sample (3) or N			
D-Hamilahad		Received Date		elingui	shed		Received	7	Date	Tin	71	Discr	epanci	es Betw	een	_J Ps	operty 1	Preserv (Y) o	red r N	C	COC Record Present Upon Sample Rec't		
Relinquished by		by Date	Time	by		1	by	RIG				Samp	les La	beis an	d	5) Received Within O or N							
Hed Ex	1.6	May 3-20-03	1000	20	TIPO	SITE		[]		ſ		NOTE		d?Y c	" (U)	Ho	olding T	imes (Y) o	r N	Co Te	ooler emp. 15	<u>ما. د</u>	_ ℃
1500	-	7 1702 1	 		WAS	15	K	EWR	1111	N								٣٠٠		• •			'

Bechtel Hanford Inc. CHAIN OF CU							AMP	MPLE ANALYSIS REQUEST B00-054-238 Page 1 of 1							of 1				
Collector R B Kerkow			(Compan R B K	v Contact erkow	Telepho 372-2						ect Co		nator	Price Co	ode (35		rnaround
Project Designation 100-NR-1 TSD Si		mpling - Soil			Location -1 Trench , Plume 8-B	SAF No. B00-054 Air Quality							7de	45					
Ice Chest No.	°C 01	027	1	Field Lo	gbook No. 24-3	COA R1301N2600 Method of Shipment LED &							ϵ	\					
Shipped To				Offsite P	roperty No.	R 107175 Bill of Lading/Air Bill No. N/A													
POSSIBLE SAMP	LE HAZAI	RDS/REMARKS																	
Radioactive					Preservation	Cool 4C	None		None	Cool	. 1	No	Ш						
Special Handling	g and/or St	orage		- ⊦-	Type of Container	PWM	Page 1		<u>pri</u>	1	-	Mari	nelli		_		<u> </u>	 	
None	÷			-	No. of Container(s) Volume	-604a	A	5	, May	7587	<u> </u>	500	1	**	+				
					V Olulia.	See item (1) in	ρΗ (Soi	il) -	IC Anions -	Alcoho		See iten			+-		ļ	 	
SAMPLE ANALYSIS						Special Instructions.	9045	,	300.0 (Nitrate, Nitrite, Sulfate); NO2/NO3 - 353.1	Glycola Ketona 8015i (Metha + Sea	es - M mol}	Spe							
Sample N	o. T	Matrix *	Sample	Date	Sample Time			**************************************	()- 30 (V) (7 V)	#3	T. 3	7	-A						3× 3/20 3 7 7 18 8
J00JD1		SOIL	3/18/0		1000	X	人		K	_ 🗡	-			<u> </u>	است منسخة قد		3 (Can ,) 1		3 1
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CHAIN OF P	OSSESSIO			/Print N					AL INSTR		NS								Matrix *
Relinquished By/Remove BB KERKov	PB (en		Received. PEF	By/Stored	BBKELKN 3	te/Time 165	۱ ۳		DA: R1301N2 P Metals - 601		L) (An	timony,	, Bariu	m, Berylliun	n, Cadmin	ım, Chi	romium, Cop	per.	S=Soil SE=Sediment SO=Solid
Relinquished By/Remov	ed From 1903	Date/Time 0900	Received 1	By/Stored	In Da	te/Time 03 09	00 1	Thalliu	nese, Nickel, i m); Mercury	- 7471 - ((CV)		•		,	, ,	-		Si=Sludge W = Water O=Oil
Relinquished By/Removed From Date/Time Received By/Stored In SSGALE ALCUL 31903 0900 FED EX							1	Semm		оп (Адас	ricium	241), I	l sotopi	- Plutonian	, America	mn 241	, Strontiyas (9,90 Total	A=Air DS=Drum Solids DL=Drum Liquids
Relinquished By/Removed From Date/Time Received By/Stored In								(2)	* 40 T	VοA	5	Mary	L .	SEmi	Vot	l s'	,~ So	IL-pr	T=Tissue Wl=Wipe L=Liquid
Retinquished By/Removed From Date/Time Received By/Stored In						03/09.(lie/Time	<u></u> (رد.	(826)))/*	m	AT I	(82 52/AL	140) 215	IN	Al	-LITER	V#Vegetation X=Other
Relinquished By/Remov	ed From	Date/Time	Received	By/Stored	In Da	te/Time		- (3) ADD: VOA'S and SEMI VOA'S IN SOIL-AR (8240) NOTE: SAMPLE MATERIAL IS IN A 1-LITER PLASTIC CONTAINER. RK 3-18-03											
LABORATORY SECTION	Received By		<u>-</u> -			Ti	tie	Personnel not available to relinquish samples from the 3728 Ref # / On 3 / 19103						·					
FINAL SAMPLE Disposal Method DISPOSITION									Dispo	sed By				_ • <u>_ </u>	_ <u> </u>	<u>エ</u> ノ	·	Date/Time	

LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Hamford

Purchase Order/Project:

DATE: 3 30 03

(AF#) SOW# / Release #: 800 -054

Laboratory SDG #:

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION Custody seals on coolers or shipping □ No ☐ see Comment # container intact, signed and dated? Outside of coolers or shipping containers are $\square \mathcal{N}^{\circ}$ □ N/A ☐ see Comment # free from damage? Airbill # recorded? D/Yes □ No □ N/A ☐ sec Comment # All expected paperwork received (coc and D'Yes D No other client specific: historical data. **DNA** ☐ see Comment # alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) Sample containers are intact? □ No DNA ☐ see Comment # Custody seals on sample containers intact, DNA ☐ see Comment # signed and dated? All samples on coc received? □ No □ N/A ☐ see Comment # □ No D N/A D see Comment # All sample label information matches coc? Laboratory OC samples designated on coc? □ No D N/A See Comment # (QC stickers placed on bottles?) 10. Shipment meets LvLl Sample Acceptance ☐ Yes **∑**(No □ N/A 🌠 see Comment # 🛝 Policy? (identify all bottles not within policy. See reverse side for policy)

☐ Yes

Yes

☐ Yes

□ No

□ No

□ No

□ No

Cooler#/	temp (°C) and (omments:
#ERC	01-027	15.60

affixed to coc?

12. coc signed and dated?

11. Where applicable, bar code labels are

13. coc will be faxed or emailed to client?

concerning discrepancies? (name/date)

14. Project Manager/Client contacted

#1 sample vecidad

D/N/V

D N/A

D N/A

DINIA

☐ see Comment #

☐ see Comment #

☐ see Comment #

☐ see Comment #

Laboratory Sample Custodian:

Laboratory Project Manager: